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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/916,918      | 07/27/2001  | Radu Victor Balan    | 2001P13674 US       | 8793             |

7590 06/20/2006

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| EXAMINER |
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OPSASNICK, MICHAEL N

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| ART UNIT | PAPER NUMBER |
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2626

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/916,918

**Applicant(s)**

BALAN ET AL.

**Examiner**

Michael N. Opsasnick

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13 and 21 is/are allowed.
- 6) ☒ Claim(s) 14-20 is/are rejected.
- 7) ☒ Claim(s) 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. Claims 1,3-13 and 21 are allowed over the prior art of record.
2. Claim 22 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
3. The following is an examiner's statement of reasons for allowance:

As per the independent claims, the claim recitations pertaining to the detailed calculation of the error term for an acoustic localization of a sound source is not explicitly taught by the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 14,15,17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leahy et al (6219045) in view of Wakisaka et al (5917944) in further view of Kiyohara ("A Microphone Array System for Speech Recognition", IEEE, 1997).

As per claims 14,15, and 20, Leahy et al (6219045) teaches a virtual environment system (abstract) comprising:

“an acoustic localizer....environment” as determining the sound location (col. 5 lines 1-10)

“a user data...remote data...system controller....I/O device” as client/server relationship (Fig. 2);

“wherein control of said remote data.....localizer” as controller determines position of the user (col. 5 lines 15-25);

“wherein data.....said user” as remote data transmission (fig. 2, col. 3 lines 42-51)

As per claims 14,15, and 20, Leahy et al (6219045) does not explicitly teach a plurality of microphones arrayed to span the three coordinate axes of a three dimensional space, however, Wakisaka et al (5917944) teaches directional microphones (Fig. 8, subblocks 802,803; col. 12 lines 31-45; Wakisaka teaches the use of multiple multidirectional microphones wherein the number of microphones used is not limited) and an artisan with ordinary skill in the art of sound processing at the time of invention would readily recognize that the direction of sensitivity comprises a directional cone like volume. Therefore, it would have been obvious to one of ordinary skill in the art of speech devices to modify the device of Leahy et al (6219045) with a microphone array because it would advantageously allow for pickup of ambient noise as well as voices from a defined direction (Wakisaka et al (5917944), col. 12 lines 31-45).

As per claims 14,15, and 20, the combination of Leahy et al (6219045) in view of Wakisaka et al (5917944) does not explicitly teach delay difference in the microphone array, however, Kiyohara et al (IEEE, “A Microphone Array System for Speech Recognition, pages 215,218) teaches calculating a delay associated with the differential arrival time and calculating a SNR number (page 216, col. 1, “Delay and Sum Array”), and modifying the gains such that the signal is optimized (and inherently, it is old and well known that maximum signal represents the direction of the sound source – e.g., using cross correlation techniques – page 216, col. 1 first paragraph). Therefore, it would have been obvious to one of ordinary skill in the art of audio processing to modify the combination of Leahy et al (6219045) in view of Wakisaka et al (5917944) with delay

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and gain calculations in a microphone array because it would maximize the signal quality originating from the speaker (Kiyohara, abstract).

As per claim 17, Leahy et al (6219045) teaches position determination (col. 5 lines 15-25).

As per claims 18,19, Leahy et al (6219045) teaches transmission thru I/O device (fig. 2, col. 3 lines 42-51)

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Leahy et al (6219045) in view of Wakisaka et al (5917944) in view of Kiyohara ("A Microphone Array System for Speech Recognition", IEEE, 1997) in further view of Geilhufe et al (6584439).

As per claim 16, the combination of Leahy et al (6219045) in view of Wakisaka et al (5917944) in view of Kiyohara ("A Microphone Array System for Speech Recognition", IEEE, 1997) teaches commands from the user (Leahy et al (6219045), Fig. 4, subblocks 116, including speech and motion), but the combination of Leahy et al (6219045) in view of Wakisaka et al (5917944) does not explicitly teach voice commands; however, Geilhufe et al (6584439) teaches a GUI using voice commands to control the input from the user (col. 2 lines 50-67; col. 6 lines 53-65) and user position detection (col. 5 lines 15-25).. Therefore, it would have been obvious to one of ordinary skill in the art of user interface design to modify the teachings of the combination of Leahy et al (6219045) in view of Wakisaka et al (5917944) in further view of Kiyohara

("A Microphone Array System for Speech Recognition", IEEE, 1997) so that the devices within the combination of Leahy et al (6219045) in view of Wakisaka et al (5917944) in view of Kiyohara ("A Microphone Array System for Speech Recognition", IEEE, 1997) would be voice controlled because it would advantageously allow the user to control the devices without requiring buttons (Geilhufe et al, col. 2 lines 63-66).

### ***Response to Arguments***

7. Applicant's arguments filed 6/7/2006 have been fully considered but are moot in view of the new grounds of rejection. Examiner notes the introduction of the Kiyohara reference to address the calculations of a delay difference.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see related art listed on the PTO-892 form.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Opsasnick, telephone number (571)272-7623, who is available Tuesday-Thursday, 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Richemond Dorvil, can be reached at (571)272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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6/16/06

  
\_\_\_\_\_  
Michael N. Opsasnick  
Examiner  
Art Unit 2626